Comments on the Final Phase III RFI/RI Workplan
881 Hillside - Operable Unit 1
Submitted March, 1991

General Comments

A careful review of the document was still needed. Not all corrections were made where previous comments indicated a need for a change. Additionally, geologic descriptions and lithologic logs are still not consistent. In development of this plan, careful review of the well construction logs was needed to evaluate if wells were screened in the most appropriate intervals to intercept ground water and contaminants. This information should have been evaluated in developing this plan as it is needed in refining the site conceptual model and determining fate and transport of contaminants. This evaluation and information must be submitted within the Phase III RFI/RI Report for OU 1.

Extending the seismic reflection study into the 881 Hillside area would greatly benefit development of the conceptual model for the OU and the Rocky Flats Site. If incorporated, results of the study need to be included in the site conceptual model presented in the RFI/RI report. Without this study, DOE will have to rely on other information which may not adequately support the RFI/RI Report.

All hydrologic calculations must be shown in the RFI/RI report.

Sampling for NAPLs must be completed especially in IHSSs 119.1, 119.2 and 105.

The RFI/RI Report must evaluate the extent of contamination based on the Background Geochemical Characterization Report.

DOE must evaluate changes in contaminant levels over time in order to determine their fate and transport and hence develop an appropriate remediation. This evaluation must be presented in the RFI/RI Report.

Evaluation of the air pathway may need to be performed on a more site specific basis in order to adequately support a complete and quantitative risk assessment. Additionally, the contaminant particle size will need to be evaluated in order to adequately assess potential exposure pathways.

Soil scrape samples for radionuclides must be collected to evaluate potential contamination from IHSSs in OU 1. The assumption that contamination is a result of wind blown contaminants from OU 2 will not be supported through

implementation of the RFI/RI Work Plan as it is presently drafted.

ARAR analysis must consider State standards.

Vadose zone monitoring may be useful in determining complete clean up goals. The RFI/RI report must include an adequate evaluation of contaminants present in the vadose zone for selection of a remedial alternative in the CMS/FS stage. This may be accomplished through analyses of borehole cores.

Information from other operable units which overlap OU 1 (i.e. OU2 and OU5) must be incorporated in OU 1 evaluations where appropriate.

The Table of Contents contains pagination errors. The RFI/RI Report must be carefully reviewed to avoid such errors.

Section 1.3.2.3 - Regional and Local Hydrogeology

Figure 1-6 - The depths and thicknesses listed for the geologic units are not consistent within figure 1-6 and with figure 1-5 and the text on page 1-15.

Applicable results of the site wide geologic characterization studies must be incorporated in the final RFI/RI Report.

Section 1.4.8 - Radioactive Site, IHSS 130

Air photos prior to 1969 indicate the presence of soil mounds near IHSS 130. The RFI workplan does not explain the piles. The RFI report must include an explanation and if necessary, present the results of a field investigation.

Section 2.1.1 - Phase I and Phase II Remedial Investigations

The text states that four bedrock monitoring wells were installed during the two investigative phases. Figure 2-1 shows 7 bedrock wells. This error still exists even though Attachment 1 (p. 1-6) states that it was corrected. The final RFI/RI report must include the correction. Careful review of submittals is necessary.

Section 2.1.2 - French Drain Geotechnical Investigation

The 36 borings were drilled on approximately 100 foot centers and not 10 foot centers. The RFI/RI Report must include the correction.

Section 2.2.1.1 Surficial Geology

The final RFI/RI report must include a more detailed description of the surficial geologic units. This information is available by interpreting the borehole logs. The revised workplan failed to provide complete descriptions per previous agency comments.

The description of the valley fill is not consistent with data from the lithologic logs. For example, the well for log 68-86 shows a greater thickness than stated for the surficial unit. Additionally, in cross section A-A' (Figure 2-4), the lithologies shown in wells 4-87 and 47-87 are not consistent with the stratigraphic logs. Corrected logs and or cross sections must be used in the evaluation of geologic and hydrologic conditions may be important in the implementation of the RFI/RI Work Plan and need to be covered for the RFI/RI Report. Submittal of validated lithologic logs is necessary. The description of the swales provided in the response to comments need to be added to the RFI/RI report.

Section 2.2.1.2 Bedrock Geology

The response to EPA comments on this section, refers to Section 5.2.1.3 for plans pertaining to hydraulic testing of the sandstones. Section 5.2.1.3 has no mention of the hydraulic testing.

Section 2.2.2.1 Unconfined Flow Systems

The investigation must determine whether the claystones are locally saturated. The revised work plan does not indicate this even though the response to EPA comments state that the text was revised.

Ground-Water Flow Rates -

The calculations for flow rates assume a gradient of 0.15 for the colluvial gravel at the hillside. This is not consistent with the calculated vertical hydraulic gradients for the colluvium as listed in Table 2-2. This can greatly affect the calculation. The final RFI/RI report must calculate the flow rate using the appropriate data.

Table 2-4 indicates that wells 5-87 and 8-87 are completed in weathered claystone. This is not consistent with table 2-1 which indicates that these wells are completed in unweathered sandstone. The values in table 2-4 were used in the calculation of a mean hydraulic conductivity. This value will change when the tables are corrected. The inconsistency again shows the need for thorough submittal review.

Some wells were identified as dry wells. These wells may be

screened above the water table or the bedrock contact. Therefore, the water level maps may not be accurate. Additionally, the RFI/RI field work must establish if the wells are dry due to improper placement of the screen interval. Installation of additional wells in the area and continued monthly water-level measurements of existing wells is necessary to obtain more accurate water-level information. This information is also needed to estimate contaminant flow rates. Verification of proper well construction and appropriate screened interval is necessary for all dry wells.

Section 2.2.2.2 Confined Flow System

The text states that the greatest flow potential in the Arapahoe Formation is in the sandstones contained in the claystones. The text goes on to explain that the lateral extent and degree of interconnection of the sandstones is therefore critical to know in order to understand the nature of the flow. The high resolution seismic reflection studies are referenced as a way to learn more about the sandstone units. Yet, the seismic study was not planned to cover areas of the 881 Hillside. Results of the Phase I and Phase II studies indicate that there is a need to continue the seismic study into the 881 Hillside area. The final RFI/FI Report may be inadequate without such information.

Section 2.3.1 Background Characterization

Comments regarding the Background Geochemical Characterization Report must be addressed and taken into account during the evaluation process for the Operable Unit 1 report.

Section 2.3.2 Soil Characterization

Table 2-13 - The abbreviation UC under BH5987 is not identified.

Section 2.3.2.1 Organic Contamination

The hit of trichloroethane at 1 ug/kg must not be discounted until further testing confirms the absence of the contaminant.

Section 2.3.2.2 Metals

The evaluation of metals contamination is incomplete. The RFI/RI report will need to evaluate the metals analyses based on background values determined in the most current Background Geochemical Characterization Report. This includes submitting tables indicating the sample location and analytical value, background (or tolerance interval) value and any other pertinent information necessary to evaluate the sample results.

The results for cesium, molybdenum and tin were not reported in both the previous and revised workplans. The final RFI/RI workplan will need to include this information for evaluation. The lithium results will also need to be evaluated.

Section 2.3.2.3 Radionuclides

This section did not adequately address EPA's concerns. The final RFI/RI report must address the comments under this section and previous EPA comments to the satisfaction of the agency in order to receive approval of the final RFI/RI Report.

Surface scrapes will need to be taken in IHSS 130 and immediately south of the IHSS. Additionally, Table 2-17 is incomplete. The RFI/RI report will need to evaluate the radionuclide analytical information in more detail. The table must include the sample location, depth of sample, length of the composite sample, analytical value and the background value presented in the most current Background Geochemical Characterization Report approved by the agency. Maps showing the vertical and horizontal extent of contamination are necessary as they are key to development of a site conceptual model for the geology and risk models. It is not sufficient to state that the radionuclide contamination was likely due to the 903 Pad Area. A site conceptual model of pathways must be developed to determine the source of the contamination.

The uranium ratios must be listed in Table 2-18.

It is not acceptable to use two times the upper tolerance interval to determine the presence or absence of contamination. Methods approved in the Background Geochemical Characterization Report will need to be used.

Values for U^{235} must be provided in the report.

Section 2.3.3 Ground Water

The RFI/RI report must show conclusive evidence that ground water in unweathered bedrock is in the confined ground water system.

Figure 2-11 shows second quarter values of TCE reported for several monitoring wells. These levels are not representative of the maxima. The RFI/RI report must evaluate all the sample data. Specifically, trend analyses are necessary which show changes in the concentrations through time. The current figure is not representative of the contamination on the site as second quarter results do not show contamination in wells 3-87, 8-87 and 53-87 as other results so. This applies also to Figure 2-12.

The data and evaluation provided do not conclusively

indicate that contamination is not present in the unweathered sandstone units. It is an objective of the RFI/RI to prove conclusively the presence or absence of contaminants in the unweathered sandstone units. The report must prove that the unweathered bedrock is part of the confined flow system. Storage coefficient values for bedrock must be presented to verify confined conditions. Fractures may also cause hydraulic interconnection to the bedrock units. This must be evaluated in the RFI/RI Report.

Table 2-20

Detection limits cannot be set so high that low levels of contamination are masked. All analyses which exceed CLP detection limits for any parameter tested, must be identified and reevaluated.

Section 2.3.3.2 Inorganics

The section lists three wells as being dry yet in the previous section these wells were not identified as such. The RFI/RI report must correct this discrepancy. If the difference is that the wells contained only enough water to take a VOC sample, this must be explained and the criteria followed (the appropriate) must be referenced. It is otherwise misleading and not representative of the site.

Data tables such as those in the previous section, must be provided for the inorganics data. The maxima are not shown for inorganics. Trend analyses must be performed in order to adequately evaluate the data. The section is vague and does not provide specific information which will be necessary for the RFI/RI report. Data for each analytical parameter must be summarized. Explanations for elevated metal values must be explained (i.e. lithium values greater than 25 times background).

Section 2.3.4.1 South Interceptor Ditch

The surface water flow diversions were not mentioned in the text as commented on previously by EPA. The response to comments defers the change the RFI/RI Report. The change had been made in other sections of the workplan and it is therefore not clear why the change was not made here. Overall review of the submittal is necessary in order to have an accurate and consistent document. The RFI/RI Report must be reviewed for technical accuracy and overall consistency.

Section 2.3.4.2 Woman Creek

The text is vague and lacks necessary detail. The RFI/RI Report will provide detailed analyses of the results.

Section 2.3.5 Sediments

In the RFI/RI Report, the figure showing sediment sampling locations must be located on a more detailed map and show the IHSSs.

Section 2.3.6 Air Monitoring

Site specific air monitoring may be necessary in order to develop an adequate risk assessment for the RFI/RI report as air is an identified exposure pathway.

Section 2.4.1 Contamination Sources and Types

The data do not confirm that radionuclide contamination is from the 903 Pad area. This section in the RFI/RI report must reflect the results of the data and explain the contribution of radionuclide contamination from drums stored at IHSSs 119.1, 119.2, 130 and any other pertinent IHSS in the OU.

Section 2.4.2 Potential Release Mechanisms

The box for deposition in figure 2-25 must indicate an exposure route.

Section 3.2 Phase I and II RI Conclusions

Results from the IM/IRA activities must be summarized in this section as well.

The occurrence in surface water of elevated radionuclides other than uranium must also be mentioned.

Table 3-1 Phase III RFI/RI Objectives and Activities

Item 5 under characterize site physical features needs to refer to OU1 rather than OU2.

The extent of radionuclides must be determined from contamination originating at sources other than the 903 Pad area.

Section 4.1.3 Task 3 - Field Investigation

The text refers to Section 3.2 and should be Section 3.3 for field objectives and activities.

Section 4.1.5.3 Nature and Extent of Contamination

The nature and extent of contamination via the air pathway

must be evaluated in the investigation. The workplan does not demonstrate how this will be accomplished.

Section 4.1.6.1 Contaminant Identification

The particle size of some environmental contaminants may be necessary in determining potential exposures. This information must be collected during the investigative stage in order to complete an adequate risk assessment.

Section 4.1.7 Task 7 - Treatability Studies/Pilot Testing

In the RFI/RI Report, the treatability studies scheduled for OU 1 need to be listed on the OU schedule in Section 8.

Section 5.1.1 Step One - Reviewing Existing Data

It is to DOE's benefit to use all data pertinent to OU1 that has been collected to date. Limiting the work plan to data that only focuses on data through summer 1989 may cause oversight of data gaps and therefore a reliance on conservative judgments and conclusions for the RFI/RI report and CMS/FS report. All data pertaining to the IM/IRA must also be included in field plans. If it is necessary to alter plans as field work is in progress, then amendments can be made. It is more expeditious and effective to evaluate field results as soon results are known so that plans can be altered if necessary than to wait and evaluate all information after field work is completed.

Section 5.1.1.3 Liquid Dumping Site (IHSS 104)

Monitoring wells will need to be installed if samples from the boreholes indicate the presence of contamination.

Section 5.2 Source Characterization

The revised (6/25/91) borehole sampling methods for VOCs are not consistent with other operable units but are with SOP GT2. Discrepancies between operable units must be clarified.

Section 5.2.1.6 - Hillside Oil Leak Site: IHSS 107

The proposed location for monitoring well MW17 does not appear to have been moved southward. The location of the well must be such that the ground water flowing from under the skimming pond can be monitored.

Section 5.2.1.7 - Multiple Solvent Spill Sites: IHSSs 119.1 and 119.2

The extraction well location needs to be identified. Also, the text states that two piezometers will be installed on each

side of the extraction well. This is not clear on Plate 1 which shows four piezometers. This will need clarification in the RFI/RI report.

The response to EPA comments is unsatisfactory regarding the potential contamination around borehole 15-87. Review of the data for this borehole indicates the presence of semi volatile organics including bis(2-Ethylhexyl)Phthalate at a concentration of 1,900 uG/kg. Confirmation drilling in the area is necessary in order to verify the presence or absence of contamination in this area.

Section 5.2.1.11 - Toluene Contamination

An MSDS sheet and/or analysis of Coherex must be supplied with the RFI/RI report if this is determined to be the source of the toluene contamination. Other chemicals associated with the Coherex must be evaluated to help determine if the Coherex was the source. A map showing the extent of Coherex application is necessary. The depth of the toluene contamination found in the boreholes must also be explained.

Borehole samples must be collected during the monitoring well installation of wells downgradient from the french drain to help determine the extent of toluene contamination.

Section 5.2.2.1 Chemical Analysis of Soil Samples

The borehole and well sample media which are downgradient from IHSSs 102 and 105 must be sampled for total petroleum hydrocarbons in order to determine extent of potential contamination from these source areas.

Section 5.2.2.2 Soil Blanks

If soil blanks are used, a detailed description of the soil blank preparation and handling must be submitted in the RFI/RI report.

Section 5.3.1 Ground Water

The potential for Non-Aqueous Phased Liquids (NAPLs) exists in the OU 1 area (IHSS 119.1). Investigations must include evaluation of NAPLs and the results must be reported in the RFI/RI report.

Section 5.3.1.3 Hydraulic Testing

The location of the testing must be detailed in the RFI/RI Report.

Water generated from the pumping and tracer tests cannot be reinjected into the wells if the water is contaminated. Handling of the water must be consistent with the approved SOPs and the joint EPA and CDH letter regarding disposal of investigatory wastes (June 18, 1991 re. contained in policy).

A potential problem with the location of the tests is that they are along Woman Creek. This can pose an hydraulic boundary and thus give inaccurate test results. Prior to initiation of the tests, this possibility must be reviewed. The RFI/RI report must include a detailed explanation of the tests, the results, the assumptions, and the limitations.

Well construction may cause compaction of alluvial material being tested. This could change the hydraulic conductivity of the test area and therefore testing would not provide representative results.

Well development must be done carefully so as not to alter hydraulic conductivity results.

The October, 1990 work plan used an hydraulic conductivity of 1 x 10^{-3} cm/s for calculation of the discharge generated during pumping. This is different from that in the March, 1991 work plan which shows a value of 8 x 10^{-4} cm/s and of the 1 x 10^{-3} cm/s under the Tracer Test section. The RFI/RI report must explain in better detail how the K value was derived and present supporting data.

Detailed diagrams must be presented in the RFI/RI report of the pumping and tracer test well arrays.

Data collected for the Woman Creek Alluvium may not be usable for the other hydrogeologic units. Therefore, testing needs to be done in the other units as well. The text states that the pumping tests cannot be performed in the other units because the saturated thickness is not large enough. Yet the text also states that the saturated thickness for the Woman Creek Alluvium varies from zero to four feet on the average. The approaches for testing the different hydrogeologic units appears inconsistent. The RFI/RI report must justify and explain the selection of tests, and evaluate the accuracy of each of the test methods for the particular area in which they were performed. It is not acceptable to use Woman Creek data for the other hydrogeologic units.

The tracer test is to be completed primarily to determine dispersivity. Dispersivity is extremely dependent on the scale of the geology around the pumping wells. This information will not be applicable to a larger area under inhomogeneous conditions. Error may introduced due to inhomogeneous stratification. The observation wells are within 4.5 feet of the

pumping well. Generally, distances of three to five times the aquifer thickness are necessary to eliminate effects of stratification. The objective of the test and subsequent modeling must be determined ahead of time and the test must be designed to meet the objectives. The current plan for hydraulic testing seems limited in information gained regarding the plant geology and hydrology. The additional administrative problems with reinjection and the cost indicate that the testing be rethought. A more effective use of resources would be to extend teh seismic study into OU 1.

All calculations must be shown in the RFI/RI report.

Section 5.3.2 Surface Water and Sediments

The work plan states that surface water stations will be sampled monthly through 1990. Surface water stations will need to sampled through the ongoing RFI/RI process.

Section 5.3.3 Surficial Soils

The revised work plan does not address EPA's comments on collecting additional soil scrapes within and closer to the IHSSs in OU 1 (especially IHSS 130) even when sample data indicate that the additional samples are warranted (Table 2-18). Failure to collect adequate samples to properly evaluate the air pathway for resuspended contaminants will result in an inadequate risk assessment. This will jeopardize approval of the RFI/RI report.

Section 6 Environmental Evaluation (June, 1991 submittal)

General Comments

The workplan states that the EE for OU1 will be integrated with EEs for OUs 5 and 2. However, there is not an explanation of the methods to be used in integrating the data resulting from the studies. The overlap between the operable units must be identified. Sampling of vegetative communities for vegetative analysis provides an example. The required sample numbers is determined by statistical evaluation of sample adequacy. Because the workplan does not specify a required sample number, the assumption must be made that the samples will be taken until adequacy is met. Difficulties may arise due to high variability in vegetative types. The workplan does not specify if adequacy will be based on only OU5 samples or all OU samples. The correlations between the studies and basis of adequacy must be addressed.

The workplan states that air monitoring will be conducted as part of OU 1 activities. Site specific requirements for the OU 1 Environmental Evaluation need to be addressed in the workplan.

Section 6.1.2 OU 1 Contamination

The plan must specify how the geochemical data will be compared to the tolerance intervals in the Background Geochemical Characterization Report. EPA's comments on the Background Geochemical Report must be referenced when comparing the data sets. Contaminants found in ground water exposed in seeps must be considered in Table 6-1. It is important to note that analyses are not complete for OU1 and some values were not reported. Therefore, a list of contaminants present in the OU is not complete at this time. Task two must evaluate the completeness of the data analyses and identify data gaps. This needs to be completed in a timely manner to coordinate with field activities not related to the Environmental Evaluation.

Table 6-3

Include an additional footnote to the table to indicate that the July 1, 1991 Federal Register contains a notice of the final rule establishing 2 mg/L as the MCL for barium. The effective date for this MCL is January 1, 1993. Also, the MCL for selenium of 50 ug/L is effective July 30, 1992. Add a footnote indicating this.

The workplan must identify state water quality standards (Executive Order 12088 requires compliance with state water quality standards). Standards set for the Rocky Flats stream reaches will become effective (1993) prior to remediation of OU5 and therefore must be evaluated.

Section 6.1.2.1 Metals

Please include the references for the toxicity values indicated for metals in this portion of the workplan (page 9-11).

Section 6.1.2.2 Radionuclides

The statement that radionuclides tend to reside entirely in sediments is inappropriate as the test discusses the uptake of plutonium and americium in water cress, dragon fly larvae and snails.

Section 6.2.1.1 Selection Criteria for Contaminants of Concern

The text indicates in this section that the process for selecting contaminants of concern is being developed as a Standard Operation Procedure. EPA believes this is inappropriate. Section IV in the Statement of Work of the Interagency Agreement specifies that the Standard Operating Procedures shall detail field techniques to be used during investigation of the site. EPA does not consider the application of this criteria for the selection of contaminants of concern to

be a field activity. Many of the factors which will be considered during the selection process are dependent on interpretation of available data and information in the scientific literature. EPA believes that selection criteria are appropriately developed in discussions and working sessions of the Risk Assessment Technical Working Group and appropriately documented in meeting minutes or summaries. The application of the criteria is an evaluation activity not a field activity and should be documented in the RFI/RI report.

Section 6.2.1.2 Identification of Key Receptors - Table 6-10

Selection criteria for key receptors is based on several criteria of which four are identified. Based on these criteria, it is not clear why cheatgrass and bindweed are included on the table. Only three grasses and two upland forbs are identified in the workplan. Additionally, the selection of only two species that are associated with damaged ecosystems appears to bias the study to a finding of no impact. Selection criteria must be evaluated against the preliminary list prior to identifying the key receptors for the study.

Section 6.2.1.3 Reference Areas

EPA agrees that reference areas should be selected based on measurement endpoints and that more than one reference area may be used depending on the effects to be studied. EPA suggests that the RFI/RI report contain a matrix of candidate reference areas and selection criteria to lend support to decisions on which areas are chosen for various comparisons.

Section 6.2.2 Task 2: Data Collection/Evaluation and Conceptual Model Development

Please elaborate on which other DOE facility investigations will be pursued in the development of a preliminary list of contaminants of concern and how information from other facilities will be considered.

Section 6.2.2.1 Literature Review

The RFEDS database must be referenced for chemical information. An explanation of the EIS database is necessary (is this the RFEDS database?).

Section 6.2.3.2 Soils

The in-situ rad surveys completed in 1990 and previously need to be referenced to provide more information on the distribution of radionuclides in the study area(OUs 1, 2 and 5).

Section 6.2.5 Task 4: Toxicity Assessment

The last sentence in this section indicates that the adequacy of the existing toxicological database will be evaluated. EPA and CDH need to be closely involved in such an evaluation.

Figure 6-3, Decision Process on Use of Reference Areas for Contaminants in Tissues:

The footnote on this figure indicates that ARARs are not applicable if they are below background. This is incorrect. Background is a consideration in the development of remediation goals, as are ARARs. However, the consideration of background is irrelevant when determining whether or not criteria should be considered as an ARAR. Delete this portion of the footnote.

Section 6.2.11 Task 10: Environmental Evaluation Report

The text states that biomagnification of contaminant residues will be traced from organisms at the top of the food chain back through intermediate trophic levels to the abiotic environment. This implies that the model to determine no effects criteria will be validated using site-specific data. Clarification is necessary as to how biomagnification by organisms at the top of the food chain will be calibrated or validated without collection and chemical analysis of terrestrial animals.

Section 6.3.2 Sample Location and Frequency

It is not clear if a transect is considered a sample point or if each sample location along the transect will be a sample point. For a stratified random approach, the data from the entire transect must be considered as one data point because it is the location of the random transect.

Section 7.1 The ARAR Basis

The RFI/RI report must reflect the ARAR process as described herein. The ARAR analysis process must evaluate chemical specific ARARs, Location Specific ARARs and Action Specific ARARS. A summary of how these various ARARs are evaluated in the RI/FS process is as follows:

-Chemical specific ARARs are proposed during the draft and final RFI/RI workplan and report and are finalized during the draft and final CMS/FS report.

-Location specific ARARs and preliminary remediation

goals are proposed during the draft and final RFI/RI report and are finalized during the draft and final FS. The remediation goals are based on risk assessment, proposed ARARs and the NCP.

-Action specific ARARs are finalized during the draft and final FS.

The State plutonium in soil construction standard is a potential ARAR and must be identified. The statement that ARARs do not currently exist in soils may not be true. The RFI/RI report must reflect this.

An ARAR discussion relative to surface water is necessary in the RFI/RI report. The relationship of seeps in OU 1 to surface water must be addressed in the OU1 workplan and NOT deferred to the OU 5 workplan. Ambient water quality standards must be evaluated as potential ARARs for the seeps. Because surface water from OU1 drains into OU5, ARAR and other pertinent evaluations for each OU must be coordinated and thought of as completely separate areas.

Table 7-1 shows the proposed Chemical-Specific ARARs for ground water. This table has eliminated the State standards for ground water. Identification of State ARARs is necessary for ARAR analysis. Thus, table 7-1 is subject to change for the RFI/RI report. The potential ARARs listed in the OU5 workplan is more thorough and should be referenced in rewriting Table 7-1. The current WQCC standards are not properly reported. Corrections must be made prior to evaluation of ARARs and the corrected values must be in the RFI/RI report.

Results of sampling and analysis must be such that evaluation of data is possible against ARARs and a 10-6 point of departure for the risk assessment. This should be established as a DQO.

Section 7.4.1 Safe Drinking Water Act MCLS

At the time of final promulgation the new MCLs and MCLGs became relevant and appropriate. The standards may be considered as applicable on the date they become effective. The text must be changed to reflect the correction.

Section 7.4.2 RCRA 40 CFR Part 264 Subpart F Concentration Limits

OU 1 does include a RCRA hazardous waste unit which is Building 885 Drum Storage Site (IHSS Ref. No. 177). The text for the RFI/RI will need to be modified.

RCRA is relevant and appropriate for the operable unit. Background is a potential ARAR under RCRA. Background can be replaced by an ACL once the ACL is established. Until such time, background is a potential ARAR and not TBC. The workplan must be changed to reflect this.

Sections 7.5 and 7.6 Operable Unit No. 1 Soil ARARs and ARARs Summary

Identification of the detection limits and use of the method detection limits used to evaluate the RFI/RI sample data is deferred to the GRRASP. The GRRASP was submitted to EPA in June, 1991. EPA may comment on the GRRASP in which case, the GRRASP comments would apply to the OU 1 workplan. The detection limits must be adequate to enable evaluation of the data in regard to the 10^{-6} point of departure in the risk assessment.

Comments on the Quality Assurance Addendum
QAA 1.1, Operable Unit No. 1

General Comments

The QAA is necessary only to identify differences in activities at OU 1 from those identified in the QAPjP. These changes were not highlighted or specifically identified in the QAA and need to be.

Section 3.1 Data Quality Objectives

The response to EPA comments indicates that Table 1 lists the analytical methods, detection limits, and precision and accuracy objectives for parameters that are not listed in Appendix B of the QAPjP. Table 1 does not contain this listing. If particular parameters and or analytical methods are to be used for OU 1, they must be presented or referenced to the GRRASP. This must be corrected in the RFI/RI report.

Section 3.2 Sampling Locations

The list of monitoring well sample locations must be include all the proposed well sites and the existing well sites in OU 1. (See Plate 1). The current list is inadequate.

Surface water sample stations SW 32, SW 33 and SW34 are not listed. These stations must be sampled either under OU 1 or OU 5 workplan. It must be stated clearly under which plan the sampling will occur.

Soil sample collection must be consistent with the SOPs. If a specific change is necessary for OU1, the nature of the change and the justification must be presented.

Borehole samples must be collected from the proposed well locations MW34, MW35 and MW37 as these are located along Woman Creek. This must be coordinated with the OU 5 workplan. Additionally, The following boreholes will also need to have borehole samples collected: BH51, MW30, MW31, MW32(South Interceptor Ditch), MW20, MW21, MW22, MW23 (northern part of OU1), MW26 (downgradient of IHSS 130), MW24, MW25, MW27, MW28 and MW29(IHSS 119.1).

Section 3.4 Hydrologic Testing

Packer is misspelled.

Section 3.7 Quality Control Samples

The last sentence in the response to EPA comments is incomplete. An explanation of acceptable difference is necessary.

Table 3

The table lists preservation and handling of biota samples. This must be consistent with approved SOPs for Ecology. If differences between the two documents occur, then the differences need to be highlighted in table 3.

Appendix A - Analytical Methods, Detection Limits, and Data Quality Objectives

Only the differences between methods, detection limits and objectives for OU 1 and the site wide criteria need be mentioned in the QAA. If all criteria are mentioned, as shown, then the differences need to be highlighted.

On page 36, the * refers to a set of borehole and monitoring well samples. The monitoring well paired with borehole BH08 is MW36 and not MW33 as indicated in the text (see Plate 1).

FCD:June 19, 1991:pac:881ph3.rev